REMARKS

The Examiner has objected to the drawings as not showing the power lines or the control system as referred to in the claims. Applicant hereby submits an amended Fig. 1 which includes the power lines and the control system. Paragraphs 54 and 57 have been amended to refer to the power lines and the control system, respectively.

Paragraph 51 has been amended to refer to Fig. 2 rather than Fig. 1 as showing C_{ant}.

Paragraph 65 has been amended to bring in the reference numbers of Fig. 3 as set forth in the description of Fig. 3 in paragraph 47.

Paragraph 70 is amended to correct a typographical error.

The Examiner has objected to Claims 26-29 as adding new matter. Applicant submits that Fig. 2 provides the required support for Claims 26-29. A person skilled in the art looking at Fig. 2 would understand that both the voltage source decreases with increasing Copt giving a voltage dividing effect, and that the high pass filter frequency decreases the input to the buffer amplifier with increasing Copt. A person skilled in the art would see from the diagram that this is the case, FC=1/((2Pi*(Copt+Cant)R1). Paragraph 60 teaches that "The sensitivity of the circuit to user motion is in part due to the high voltage sensitivity occurring from high input impedance of the buffer amplifier, and in part due to the filtering. . . . The input circuitry to the buffer stage acts as a high pass filter." The high pass filter can only increase the sensitivity with increasing Copt if the high pass filter in front of the buffer alters the sensitivity to the background AC because it further decreases the signal into the buffer amp. The voltage divider effect is indicated in Fig. 2 by noting the voltage source decreases in level with increasing Copt. In addition, paragraph 18 states that "An electric potential measurement is done with a high input impedance electrode so the circuit attached to it does not alter the potential under measurement" and paragraph 30 states "The present invention uses receivers with

high input impedance so as not to draw currents or distort the field. Also, in the passive mode, the frequencies of operation are that of or near the electrical power line frequency and are surely quasistatic. These frequencies are extremely low, and substantially reduce the conductivity of objects near the sensor, thus preventing field distortions." This clearly indicates that the first stage amplifier has an input impedance high enough to preserve the output voltage signal from the sensor and to keep the sensor floating at the voltage of the background electric field, but small enough to keep the corner frequency of the high pass filter near the frequency of the background electric field as required by Claim 26. Further, this indicates that the capacitance created by the body in the interaction zone is electrically a part of the high pass filter, wherein an increase in the capacitance shifts the corner point of the filter lower, and wherein sensitivity of the device at the frequency of the background electric field increases as the corner point decreases as required by Claim 27. This is not shown by Zank. Claims 26-29 should be allowable.

The Examiner has rejected Claims 36-38 under 35 USC 102 as anticipated by Zank et al.

Claim 36 requires picking up electrical fields, including a background electrical field of a particular frequency, existing in the interaction zone and to provide an output voltage signal representative of the electrical fields sensed and comparing the processed output signal representative of the electrical fields sensed by the sensor within a desired range of frequencies at a particular time with a processed output signal obtained for the background electrical field when no body is present in the interaction zone, differences in such signals indicating presence and motion of a body in the interaction zone. Zank et al. do not compare their processed signal with a processed output signal obtained for the background electrical field when no body is present in the interaction zone. There is no comparison with background electric fields in Zank et al. Claims 36 and 37 should be allowable.

Further, the background electric field is defined as having a particular frequency. This requires that the background electric field be an A.C. electric field. A D.C. field has no frequency. Claim 36 states that "the processed output signal representative of the electrical fields sensed by the sensor within a desired range of frequencies at a particular time" is compared with "a processed output signal obtained for the background electrical field when no body is present in the interaction zone, differences in such signals indicating presence and motion of a body in the interaction zone." This means that the comparison to indicate the presence of a body in the interaction zone is with the background A.C. electric field. Zank does not show or suggest determining the presence of a body in the interaction zone by comparing a signal from the sensor with an A.C. background field signal. While the Examiner points to Fig. 5a of Zank et al. as showing a background A.C. field as part of the sensed signal, there is no use of this A.C. signal to determine the presence of a body in the interaction zone. Properties of the A.C. signal with the body present in the interaction zone is not compared with properties of the A.C. signal without the body present. Fig. 5a of Zank et al. merely shows a D.C. signal response on top of the background A.C. signal. Zank et al. describe Fig. 5a as showing the distortion created by a walking person which "caused a noticeable measurement several hundreds of a millivolts about the noise floor which is about 160 millivolts." Thus the background A.C. electric field signal is indicated as the noise level and the detected signal has to exceed the noise level to indicate presence of a body in the interaction zone. This is not a comparison of background noise signals as the D.C. measurement is not comparing A.C. signals. In addition, the use of Zank et al's circuitry to detect power lines by sensing the A.C. signal is merely sensing the A.C. signal and when the A.C. signal gets stronger. It is not a sensing of a body in the interaction zone. Claim 36 is not anticipated by Zank et al. and should be allowable.

Claim 38 requires "performing a particular body gesture in the interaction zone and obtaining a plurality of consecutive processed output signals over a particular period of time representing the particular body gesture to create a predefined body gesture signal representative of the particular body gesture; monitoring further processed output signals over monitoring periods of time; comparing the monitored processed output signals with the predefined body gesture signal to determine if the predefined body signal is performed and providing an occurrence signal if the gesture is performed; and using the gesture signal to control the electrical apparatus." The Examiner refers to Zank et al. Col 6, lines 36-52, as showing the performing of the gestures in the interaction zone and obtaining a plurality of consecutive processed output signals over a particular period of time representing the particular body gesture to create a predefined body gesture signal and comparing the monitored processed output signals with the predefined body gesture signal to determine if the predefined body signal is performed. However, applicant submits that Zank et al. is concerned only with detecting a body within the interaction zone and does not teach or suggest generating signals for particular gestures and then using these generated signals to identify particular gestures made by a body within the interaction zone. Nothing is disclosed by Zank et al as controlled is response to particular body gestures. Claims 38-40 should be allowable.

The Examiner has rejected Claim 21 under 35 USC 103 as obvious over Zank et al. Zank et al. does not show an initial high pass filter between the sensor and an initial buffer amplifier and then a low pass filter between the buffer amplifier and a second stage amplifier. The Examiner says that it would be obvious that filters could be positioned either before or after an amplifier and produce the same result of removing the unwanted signal. However, applicant has found that if the very low frequency signals are passed through the amplifier and are amplified, that it is much harder to remove such signals than if the signals are removed prior to amplification. A simple low pass filter

does not do a good job of removing these signals after they are amplified. Therefore, without a suggestion in Zank et al. that the low pass filter be placed before the amplifier, and without other art making such a suggestion in Zank et al's situation, it would not be obvious to modify Zank to provide the filtering before the amplifier. Claim 21 is not obvious from Zank et al.

The Examiner rejects Claim 22 as obvious over Zank et al. in view of Peters and rejects Claims 23-25 as obvious over Zank et al. in view of Peters and McDonnell et al. The Examiner states that Zank et al. show the use of capacitance to create the sensor signal. However, Zank et al. specifically use a shield to reduce or eliminate the capacitance. Zank et al. do not want the capacitance. Thus, it would not be obvious to include the capacitance features of Peters or McDonnell et al. into Zank et al. Such substitution would not be obvious as Zank et al. teach away from using capacitance. Claims 23-25 should be allowable.

Please charge any additional fees due, or deposit any overpayments, to Deposit Account No. 20-0100 of the undersigned.

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